UNITED STATES PATENT AND TRADEMARK OFFICE

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10/684,138	10/10/2003	Peter T. Barrett	MS1-1758US	1286

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EXAMINER
ZHONG, JUN FEI

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/684,138	BARRETT ET AL.
	Examiner	Art Unit	
	JUN FEI ZHONG	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/ are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *12/18/2007*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 1-55 have been considered

but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Regarding claim 33, the phrase "proximate" renders the claims indefinite

because the claims include elements not actually disclosed (those encompassed

by "proximate", in the specification applicant never define the amount of time it

takes to join a client which could vary from millisecond to tens of second),

thereby rendering the scope of the claims unascertainable. See MPEP

§ 2173.05(d).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

5.   Claims 1-7, 9-15, 17-25, 27-45, 47-55 are rejected under 35 U.S.C. 103(a)

as being unpatentable by Mao (Patent # US 6,728,965 B1) in view of Emura

(Patent # US 5732217).

        As to claim 23, Mao discloses a channel change server (e.g., broadband

digital terminal (BDT) 12) comprising:

        retained intra frames for a plurality of video streams (e.g., FIFO buffer 50

stores I frame; Fig. 7), each respective video stream of the plurality of video

streams associated with a respective channel of a plurality of channels (see col.

8, lines 14-36);

        a channel change request detector that is capable of detecting channel

change requests from individual clients of a plurality of clients (e.g., broadband

digital terminal (BDT) 12 receives channel change request from user) (see col.

5, lines 51-65);

        a channel change request handler (e.g., broadband digital terminal (BDT)

12) that is configured to respond to a detected channel change request from a

particular client of the plurality of clients by extracting a retained intra frame of a

video stream associated with a requested channel from the retained intra frames

(see col. 6, lines 16-29; col. 8, lines 36-58);

        wherein the channel change server is associated with multicast video

distribution of the plurality of video streams (see col. 8, lines 59-64).

Mao does not specifically disclose transmitting the extracted retained intra frame and no dependent frames to the particular client using a unicast communication.

Emura discloses transmitting the extracted retained intra frame (e.g., keyframe) and no dependent frames to the particular client using a unicast communication (see col. 16, line 66 through col. 17, line 20; Fig. 3B, 14, 16A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit retained intra frame and no dependent frames as taught by Emura to the channel change system of Mao in order to perform a high-speed playback at a playback speed requested from a terminal apparatus (see col. 6, lines 29-32).

As to claim 13, this claim contains the limitation "cached" instead of "retained" in claim 23. Thus, claim 13 is analyzed as previously discussed with respect to claim 23 above.

As to claims 1, 35, and 41, they contain the limitations of claim 23 and are analyzed as previously discussed with respect to claim 23 above.

As to claim 48, Mao discloses a system comprising:

at least one processor (e.g., processor 55; Fig. 7);

one or more media (e.g., buffer memory 50 or 57) including processor-executable instructions that are capable of being executed by the at least one

processor (e.g., BDT 12 can be equipped with element management system 13 which is software based) (see col. 3, lines 34-41), the processor-executable instructions adapted to direct the system to perform actions comprising:

multicasting a plurality of channels (see col. 8, lines 59-64);

retaining at least one intra frame for each channel of the plurality of channels (see col. 8, lines 14-36);

Emura discloses transmitting a retained intra frame (e.g., keyframe) and no dependent frames for a requested channel as a unicast communication (see col. 16, line 66 through col. 17, line 20; Fig. 3B, 14, 16A).

As to claim 24, Mao discloses the channel change server as recited in claim 23, further comprising:

a video stream buffer (e.g., FIFO buffer 50 stores video stream from multiple channels; Fig. 5 and 7) that is adapted to buffer each video stream of the plurality of video streams to create a plurality of respective buffered portions (see col. 8, lines 14-36 and 59-64).

As to claim 25, Mao discloses the channel change server as recited in claim 23, further comprising:

a join command issuer (e.g., BDT 12) that is adapted to send a join message (e.g., confirmation signal) to a replication point (e.g., broadband network unit (BNU) 14; Fig. 1) to cause the replication point to join the particular

client to a multicast group corresponding to the requested channel (see col. 6, lines 16-29).

As to claim 27, Mao discloses the channel change server as recited in claim 23, further comprising:

a synchronization determiner (e.g., processor 55) that is adapted to synchronize a multicast joining operation for the particular client to a multicast group corresponding to the requested channel with regard to a next decodable frame (e.g., I frame) of the video stream associated with the requested channel (see col. 8, lines 42-51; Fig. 5 and 7).

As to claim 28, Mao discloses the channel change server as recited in claim 27, wherein the synchronization determiner (e.g., processor 55) is further adapted to synchronize the multicast joining operation for the particular client to the multicast group corresponding to the requested channel using a quasi-predicted time (e.g., instantly) of the next decodable frame of the video stream associated with the requested channel (see col. 8, lines 42-51; Fig. 5 and 7).

As to claim 29, Mao discloses the channel change server as recited in claim 27, further Comprising:

a time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel) of the video stream that is associated with the requested channel (see col. 8, lines 37-42);

wherein the synchronization determiner (e.g., processor 55) is further adapted to synchronize the multicast joining operation for the particular client to the multicast group corresponding to the requested channel with regard to the time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel; Fig. 5) of the video stream that is associated with the requested channel (e.g., processor 55 is always pointing to I frames store in FIFO buffer 50, when a channel change request received, it can instantly transmit I frame to user) (see col. 8, lines 36-51).

As to claim 30, Mao discloses the channel change server as recited in claim 29, wherein a size of the time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel; one group of picture (15 frames) in MPEG-2 standard is about half second) corresponds to a time period (e.g., half second or more) consumed when joining the particular client to the multicast group corresponding to the requested channel (see col. 8, lines 4-13 and 36-42).

As to claim 31, Mao discloses the channel change server as recited in claim 29, wherein a size of the time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel) corresponds to a combination of a multicast joining time (i.e., transmitting time) and an intra frame interval duration (e.g., one group of picture (15 frames) in MPEG-2 standard is about half second) (see col. 7, lines 39-57; col. 8, lines 36-51; Fig. 5 and 6).

As to claim 32, Mao discloses the channel change server as recited in claim 29, wherein a joining time (i.e., transmitting time) of the time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel) corresponds to a time period consumed when joining the particular client to the multicast group corresponding to the requested channel (see col. 7, lines 39-57; col. 8, lines 36-51; Fig. 5 and 6).

As to claim 33, Mao discloses the channel change server as recited in claim 29, wherein the synchronization determiner (e.g., processor 55) is further adapted to determine that a join command (e.g., confirmation signal) is to be issued, a joining time (e.g., transmitting time; i.e., signal transmitting time between user and BDT) of the time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel) of the video stream that is associated with the requested channel (see col. 7, lines 39-57; col. 8, lines 36-51).

Mao does not specifically disclose when to issue the join command.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose any time as the send command time after the channel change request received in order to minimize the waiting time for synchronize frame.

As to claim 34, Mao discloses the channel change server as recited in claim 29, wherein the synchronization determiner (e.g., processor 55) is further

adapted to prompt issuance of a join command (e.g., confirmation signal), time-delayed buffered portion (e.g., FIFO buffer 50 stores minimum 15 frames for each channel) of the video stream that is associated with the requested channel even if the extracted retained intra frame of the video stream associated with the requested channel has not been fully delivered to the particular client using the unicast communication (e.g., the confirmation signal does not depending on the I frame transition) (see col. 6, lines 16-29; col. 7, lines 39-57; col. 8, lines 36-51).

Mao does not specifically disclose when to issue the join command.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose any time as the send command time after the channel change request received in order to minimize the waiting time for synchronize frame.

As to claims 14-15, and 17-20, they contain the limitations of claims 24-25, 27-30 and are analyzed as previously discussed with respect to claims 24-25 and 27-30 above.

As to claim 21, it contains the limitations of claim 33 and is analyzed as previously discussed with respect to claim 33 above.

As to claim 22, it contains the limitations of claim 34 and is analyzed as previously discussed with respect to claim 34 above.

As to claim 36, Mao discloses the arrangement as recited in claim 35, further comprising:

buffer means (e.g., FIFO buffer 50 stores minimum 15 frames for each channel) for buffering each respective video stream of the plurality of video streams to establish a respective buffered portion for each respective video stream;

synchronization means (e.g., processor 55) for synchronizing a joining of the client to the second multicast group (i) with reference to a respective buffered portion (e.g., minimum 15 frames stored for each channel) for the respective video stream that is associated with the requested channel and (ii) with regard to a next decodable frame of the respective video stream that is associated with the requested channel (e.g., I frame location) (see col. 8, lines 36-51; Fig. 5).

As to claim 37, Mao discloses the arrangement as recited in claim 36, further comprising:

issuance means (e.g., BDT 12) for issuing a join command (e.g., confirmation signal) responsive to the synchronization means (see col. 6, lines 16-29).

As to claim 38, Mao discloses the arrangement as recited in claim 35, wherein the retention means (e.g., buffer 50) comprises at least one of (i) buffering means for buffering the at least one intra frame for each video stream of the plurality of video streams and (ii) caching means for caching at least one intra

frame for each video stream of the plurality of video streams (e.g., FIFO buffer 50 stores video data for each channel) (see col. 8, lines 14-36; Fig. 5).

As to claim 39, Mao discloses the arrangement as recited in claim 35, wherein the arrangement comprises at least one server (e.g., EMS 13 is located at service provider facility and function as a server) (see col. 3, lines 34-41; Fig. 1).

As to claim 40, Mao discloses the arrangement as recited in claim 35, wherein the arrangement comprises one or more processor-accessible media (e.g., buffer 50 stores more than one video frame for each channel) (see col. 8, lines 36-42).

As to claim 42, Mao discloses the server as recited in claim 41, wherein the server is capable of multicasting the plurality of video channels to the clients (e.g., BDT 12 can connect numbers of BNU 14) (see col. 4, lines 22-26; Fig. 1).

As to claim 43, Mao discloses the server as recited in claim 41, wherein the server is capable of synchronizing a multicast joining operation for the requesting client with regard to a next decodable frame of the requested video channel (see col. 8, lines 52-64).

As to claim 44, Mao discloses the server as recited in claim 43, wherein the next decodable frame of the requested video channel comprises a next independent frame (e.g., I frame is independent frame) (see col. 8, lines 52-64).

As to claim 45, Mao discloses the server as recited in claim 43, wherein the next decodable frame of the requested video channel comprises a next dependent frame (e.g., buffer 50 stores P and B frames, which are dependent frames) (see col. 8, lines 36-39).

As to claim 47, Mao discloses the server as recited in claim 41, wherein the server is further adapted to issue a join command (e.g., confirmation signal) irrespective of a complete or an incomplete delivery to the requesting client of the retained at least one independent frame of the requested video channel (see col. 6, lines 16-29).

As to claim 49, Mao discloses the system as recited in claim 48, wherein the system comprises a video provider (e.g., video data transmit to BDT 12 over ATM network) and a channel change server (e.g., BDT 12) (see col. 3, lines 42-46).

As to claim 50, Mao discloses the system as recited in claim 48, wherein the system comprises a video provider and a channel change server that are co-located (see col. 3, line 66 through col. 4, line 6).

As to claim 51, Mao discloses the system as recited in claim 48, wherein the system comprises a channel change server (e.g., BDT 12) that receives the plurality of channels from a video provider; and wherein the channel change server performs the action of multicasting the plurality of channels (e.g., BDT 12 can connect numbers of BNU 14) (see col. 7, lines 62-65; col. 4, lines 22-26; Fig. 1).

As to claim 52, Mao discloses the system as recited in claim 48, wherein the processor-executable instructions (e.g., element management system 13 which is software based) are adapted to cause the system to perform a further action comprising:

synchronizing a multicast joining operation to a multicast group corresponding to the requested channel with regard to a next decodable frame of the requested channel (see col. 6, lines 16-30; col. 8, lines 14-26).

As to claim 53, Mao discloses the system as recited in claim 52, wherein the processor-executable instructions (e.g., element management system 13 which is software based) are adapted to cause the system to perform a further action comprising:

buffering (e.g., buffer 50 stores video frame for each channel) a video stream portion of a video stream that is associated with the requested channel (see col. 8, lines 36-42);

wherein the action of synchronizing comprises an action of determining when the next decodable frame is present within the buffered video stream portion of the video stream that is associated with the requested channel (e.g., processor 55 always pointing to an I frame), the next decodable frame comprising a next intra frame (e.g., I frame) (see col. 8, lines 36-51).

As to claim 54, Mao discloses the system as recited in claim 52, wherein the processor-executable instructions (e.g., element management system 13 which is software based) are adapted to cause the system to perform a further action comprising:

buffering (e.g., buffer 50 stores minimum fifteen frames for each channel) a video stream portion of a video stream, which is associated with the requested channel, to a length that at least equals a sum of a multicast joining time and an intra frame interval duration (see col. 8, lines 36-42);

wherein the action of synchronizing comprises an action of determining when the next decodable frame is entering the multicast joining time part of the buffered video stream portion of the video stream (e.g., processor 55 always pointing to an I frame), the next decodable frame comprising a next non-intra frame (see col. 8, lines 27-51).

As to claim 55, Mao discloses the system as recited in claim 52, wherein the processor-executable instructions (e.g., element management system 13

which is software based) are adapted to cause the system to perform a further

action comprising:

issuing a join command (e.g., confirmation signal) responsive to the

synchronizing (see col. 6, lines 16-29).

As to claims 2 and 3, they contain the limitations of claim 23 and are

analyzed as previously discussed with respect to claim 23 above.

As to claims 4 and 5, they contain the limitations of claim 36 and are

analyzed as previously discussed with respect to claim 36 above.

As to claim 6, Mao discloses the method as recited in claim 4, further

comprising: buffering a video stream portion (e.g., buffer 50 stores minimum

fifteen frames for each channel), wherein the synchronizing comprises

determining when the retained intra frame reaches a joining time (e.g.,

transmitting time) of the buffered video stream portion (e.g., processor 55 always

pointing an I frame on buffer 50) (see col. 8, lines 36-51).

As to claim 7, it contains the limitations of claim 37 and is analyzed as

previously discussed with respect to claim 37 above.

As to claim 9, Mao discloses the method as recited in claim 7, wherein the issuing comprises: transmitting a join message to a replication point (e.g., sending a confirmation signal to BNU 14) (see col. 6, lines 16-29).

As to claim 10, it contains the limitations of claims 2-5 and 7 and is analyzed as previously discussed with respect to claims 2-5 and 7 above.

As to claim 11, Mao discloses the method as recited in claim 1, further comprising:

buffering a video stream portion (e.g., buffer 50 stores minimum fifteen frames for each channel) (see col. 8, lines 36-42);

retrieving, responsive to the detecting, the retained intra frame for the requested channel from the buffered intra frames with regard to a joining time of the buffered video stream portion (e.g., processor 55 access FIFO buffer 50 for stored I frame) (see col. 8, lines 42-51);

synchronizing a multicast joining operation to the multicast group corresponding to the requested channel based, at least partially, on whether a next decodable frame is outside the joining time (e.g., processor 55 keeps track of I frame from each channel) (see col. 9, lines 9-25);

issuing a join command (e.g., confirmation signal) responsive to the synchronizing (see col. 6, lines 16-30).

Mao does not specifically disclose buffer at least two intra frames for each channel.

Mao discloses buffer minimum one GOP (i.e., one I frame in each GOP)

frame for each channel.

It would be obvious that a program developer can chose any buffer size

(e.g., two GOP frames) for buffering video data base on the design requirement.

As to claim 12, Mao discloses One or more processor-accessible media

comprising processor-executable instructions that (e.g., element management

system 13 which is software based), when executed, direct an apparatus to

perform the method as recited in claim 1 (see col. 3, lines 34-41).

6.   Claims 8, 16, and 26 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Mao in view of Emura, and further in view of Jerding et al.

(Pub # US 2005/0240961 A1).

As to claim 26, Mao discloses the channel change server as recited in

claim 23, further comprising:

a join command issuer (e.g., BDT 12) that is adapted to send a join

instruction message (e.g., confirmation signal) to the particular client, the join

instruction message stipulating (see col. 9, lines 9-25).

Emura discloses transmitting a retained intra frame (e.g., keyframe) and

no dependent frames for a requested channel as a unicast communication (see

col. 16, line 66 through col. 17, line 20).

Both Mao and Emura fails to disclose client transmit a join message to a replication point.

Jerding discloses an appointed time (e.g., after respond message 133 is received) at which the particular client is to transmit a join message (e.g., message 133; Fig. 4I) to a replication point (see paragraph 0066).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a client respond message as taught by Jerding to the channel change system of Mao as modified by Emura because the program can suspend the provision of the motion video presentation responsive to a first user input and provide a promotional motion video presentation to the user responsive to the first user input (see paragraph 0010).

As to claims 8 and 16, they contain the limitations of claim 26 and are analyzed as previously discussed with respect to claim 26 above.

7.   Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mao in view of Emura, and further in view of Duso et al. (Patent # US 5892915).

As to claim 46, Mao discloses the server as recited in claim 41, wherein the server is capable of synchronizing a multicast joining operation for the requesting client with regard to a next decodable frame of the requested video channel (see col. 9, lines 9-25);

Emura discloses transmitting a retained intra frame (e.g., keyframe) and no dependent frames for a requested channel as a unicast communication (see col. 16, line 66 through col. 17, line 20).

Both Mao and Emura fail to disclose stop transmitting I frames when detects the transmission failure.

Duso discloses the server is further adapted to refrain (e.g., freeze frame) from transmitting the retained at least one independent frame of the requested video channel to the requesting client if transmission of the retained at least one independent frame jeopardizes timely reception (e.g., failover is occurring) of the next decodable frame of the requested video channel (see col. 54, lines 36-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have failure detection as taught by Duso to the channel change system of Mao as modified by Emura because it will ensure continuity of transmission of the video stream of each clip (see col. 3, lines 3-13).

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

9.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Lin et al. (Patent # US 6,738,980 B2) is cited to video streaming.

Cooper (Pub # US 2004/0003399 A1) is cited to teach channel surfing.

Baldwin (Pub # US 2004/0255328 A1) is cited to teach fast start up for

video streaming.

Inquiries

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Jun Fei Zhong whose telephone number is

571-270-1708. The examiner can normally be reached on Mon-Fri, 7:30-5:00

EST.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Vivek Srivastava can be reached on 571-272-7304. The

fax phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

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Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

JFZ
2/29/2008

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SUPERVISORY PATENT EXAMINER
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